

AMERICAN FARMER.

RURAL ECONOMY, INTERNAL IMPROVEMENTS, PRICE CURRENT.

*"O fortunatos nimum sua si bona norint
Agricolas." Vino.*

VOL. III.

BALTIMORE, FRIDAY, APRIL 20, 1821.

NUM. 4.

HORTICULTURE.

From the *Edinburgh Review*.

THE TRANSACTIONS OF THE Horticultural Society of London.

VOLS. I. II. AND III.

The original state of most of those vegetables which occupy the attention of the horticulturist is unknown; and we are still ignorant of the native country, and existence in a wild state, of some of the most important of our plants, such as wheat, &c. We know, however, that improved flowers and fruits are the produce of improved culture, and that the offspring in a greater or less degree partakes of the character of its parent. The Crab has been thus converted into the Golden pipkin; and many excellent varieties of the Plum boast no other parent than the Sloe. Yet, till lately, few experiments have been made, the objects of which have been new productions of this nature; and nearly every ameliorated variety appears to have been the offspring of accident, or of culture applied to other purposes: An extensive field of discovery is still therefore open to the scientific horticulturist. Societies for improvements in domestic animals, and all branches of agriculture, have been long since founded; but it was not till within these few years that the London Horticultural Society was established, for the encouragement of Gardening. Judging from the past exertions of this Society, we may hope that in a very short time we shall have to record improvements and discoveries of considerable importance: as, till within a few years, Horticulture was left to the common gardener, who, in general implicitly followed the routine of his predecessor.

Fruit, as an article of general food in this country, is comparatively used in very small quantities. Yet it is well known, that in the great manufacturing towns, in those seasons when it has been abundant, the inhabitants have been far from healthy. Of the different varieties cultivated for common purposes, most are of inferior quality, and the produce of exhausted or unhealthy parents: Hitherto little care has been taken (except in the gardens of the rich) to procure the better sorts of fruit-trees, or to renew the worn out trees which so generally incumber the gardens of our cottagers. A good sort, however, is as easy of cultivation as an austere or barren variety; and one of the principal benefits to be derived from the establishment of the Horticultural Society, is the distribution of scions of new varieties, as well as of the scarcer sorts already known. Much in this respect has been done; already the taste for horticulture has increased; and the spirit of liberality, and the desire of communication, is rapidly taking place of the mean and selfish desire of concealment so prevalent amongst collectors and virtuosi of all descriptions.

As an article of luxury, much fine fruit is produced in this country; but owing to the little attention which has been paid to the mode of raising it, and the small and uncertain demand for it when produced, it is one of the most expensive articles at the table: yet perhaps there are few luxuries so sought after by our countrymen on the Continent; and, amongst their estimates of the comparative difference of cost, none seems to surprise them so much, as that of the prices of fruit in England and in France. Every one who has been on the Continent returns with stories of the number of peaches and pears purchased in France for a franc; or of the still larger quantities of figs and grapes procured in Italy for the same price. Our

climate forbids us to hope to rival our more fortunate neighbours in the growth of out-doors fruit; yet much is to be expected from the production of more hardy varieties, which will better withstand the chilling effects of our tardy springs and ungenial summers, and also from the improved and more economical construction and management of our forcing-houses. By some it is conceived, that the coldness and the dampness of our climate render fruit an unfit article of food. To this we do not agree. Others also may have an objection to any diminution in the quantity of roast beef eaten by John Bull, lest any alteration should take place in his national character; but we are willing the experiment should be tried, leaving these alchemists in the mean time to the undivided enjoyment of their roasted crabs and sloes. It may be observed, that the introduction of fruit as an article of consumption amongst the poor, is not now likely to diminish their quota of roast beef:—the poor laws, the taxes, our wars, and the 'transition state' from war to peace, have effectually done that long ago.

The Horticultural Society has a garden in the vicinity of London, established solely for the purpose of experiment: and from this much useful information has been already procured. In France agriculture is considered to have derived considerable advantages from the establishment of the *Jardin des Plantes*; and more than equal advantages may be expected to arise in this country, where the cultivators are in general much more enlightened, and always prepared to introduce improvements of every kind.* We have chosen the Transactions of the Horticultural Society for notice, that we may lay before our readers some of the modern improvements in Gardening: in doing which, we shall pursue no particular plan; but select from the different volumes before us, those parts which we think will be most amusing.

I. We have already had occasion to notice the two papers of *Mr. T. A. Knight*, (the President of the Society), on the motion of sap in trees; † and the result of this was, that the sap is absorbed from the soil by the bark of the roots, and carried upwards by the albumen of the root, trunk, and branches; that it passes through the central vessels into the succulent matter of the annual shoot, the leaf-stalk, and leaf; and that it is returned to the bark through certain vessels of the leaf stalk, and descending through the bark, contributes to the process of forming the wood.

The work before us contains several curious papers by the same author, on the subject of Vegetable Physiology, and some ingenious applications of the result of his experiments to the practical purposes

* We are sorry to be compelled to remark, that the Royal Gardens at Kew partake of none of the liberality of the Experimental Garden of the Horticultural Society—Not a single plant raised there is distributed—all access is denied, except the liberty to run through the gardens at the *pas de charge*, with a labourer at your heels. The great misfortune however is, that these gardens being considered as the public botanical gardens of the kingdom, all seeds of rare plants, &c. are sent there, and are therefore lost to the public.—But, fortunately, the Horticultural Society is not within the withering and baneful influence of Government Patronage; and it will, we hope, therefore flourish. If a ministerial member could ask of Lord Sidmouth the appointment of the gardener, the secretary, or the very porter or housekeeper to the Society, we should expect little good to arise from its institution, except to those who enjoyed the salary.

† Vol. V. p. 92.

of horticulture. All plants have a tendency to adapt their habits to the climate in which art or accident places them. Thus the Pear, which is probably a native of the southern parts of Europe, has so naturalized itself in Britain, as in some instances to ripen its fruit in the early part even of an unfavourable summer; and the Crab has, in the same manner, adapted its habits to the frozen regions of Siberia; but either of these fruits imported in their cultivated state from happier climates, are often found incapable of acquiring maturity, even when trained to a south wall.

As the pear and crab tree have acquired the powers of ripening their fruit in climates much colder than those in which they are placed by nature, ground is afforded (observes Mr. Knight) to expect that the vine and the pear tree may be made to adapt their habits to our climate, so as to ripen their fruits without the aid of artificial heat, or the reflexion of a wall, though hitherto but little has been done to learn the mode of culture best calculated to produce these changes: But the experiments of that gentleman already show, that as fine varieties, or nearly so, of fruit, may be raised in this country, as any which have been imported.

Variety is the constant attendant on cultivation; and, in the offspring, is constantly seen, in a greater or less degree, the character of the parent from which they spring.

Early maturity and hardiness are the two qualities which the cold and unsteady climate of England render most desirable in the production of new varieties. If two plants of vine were obtained from cuttings of the same tree, and placed during successive seasons, the one to vegetate on the banks of the *Rhine*, the other on those of the *Nile*, and both subsequently transplanted in early spring to a climate similar to Italy, that which had adapted its habits to a cold climate would instantly vegetate, whilst the other would remain torpid. The same occurs in our hot-houses. A plant accustomed to the temperature of the open air will, on being introduced into a hot-house, vegetate strongly in December, whilst a plant sprung from a cutting of the same stock, but habituated to the temperature of the stove, remains apparently lifeless. The powers, therefore, of plants habituated to cold climates, are more easily brought into action, or more excitable; and as every quality in plants become hereditary, when the causes which first gave existence to these qualities continue to operate,—it follows that their seedling offspring have a constant tendency to adapt their habits to any climate in which art or accident places them. But the influence of climate will depend probably less on the aggregate quantity of heat in each country, than its distribution in each season. Thus, the aggregate temperature of England, and those parts of Russia that are under the same parallels of latitude, probably does not differ very considerably; but in the latter, the summers are exceedingly hot, and the winters intensely cold. In the spring, great degrees of heat suddenly operate on plants which have been exposed to intense cold, in which excitability has been accumulating during a long period of almost total inaction, and the progress of vegetation is consequently extremely rapid.

These principles and facts are the grounds on which Mr. Knight commenced his attempts to produce trees which should ripen their fruits earlier than usual. An apple tree was trained to a south wall, and the branches were in the winter detached and removed to as great a distance from it as their stems would admit, in order that the greatest quantity of excitability might accumulate by the inaction of the tree; and, in the succeeding spring, when the flower

buds began to appear, the branches were again trained to the wall; the blossoms soon expanded, and produced fruit, which early attained perfect maturity; and the seeds from their fruits afforded plants which, *partaking of the quality of the parent, ripened their fruit very considerably earlier than other trees raised at the same time from seeds of the same fruit which had grown in the orchard*: this, of course, must be considered as a confirmation of the truth of Mr. Knight's theory. Nearly every plant, the existence of which is not confined to a single summer, admits of two modes of propagation, *viz.* by division of its plants, and by seed. By the first, an individual plant is divided into many, each of which, in its leaves, its flowers and fruit, permanently retains, in every respect, the character of the original stock; no new life is generated; and the graft, the layer, and cutting, appear to possess, in a great degree, the youth and vigour, age or debility, of the plant of which they once formed a part. No permanent improvement, therefore, can be derived from a graft or cutting, which is but a continuation of the parent tree. On the contrary, seedling plants of every cultivated species sport in endless variety; and it is by a selection from these only, that new and improved varieties of each species of plant or fruit can be looked to.

II. The progressive influence of decay upon old varieties of fruit-trees is now admitted; and the general law of Nature seems to be, that no living organized substance shall exist beyond a limited term. The diseased appearance of young grafted trees, particularly of the golden pippin, strongly confirms this position, although we are not willing to suppose that, like the supplemental noses of *Taliciotius*, the grafts are to drop off the stocks on the death of the parent tree. All reasoning from analogy, however, confirms us in the opinion, that it is impossible to continue, by grafts or buds, any variety *ad infinitum*. Mr. Knight is a strenuous advocate for this hypothesis: though we think there are some points of considerable difficulty to be got over. There are many well known varieties of trees which have been cultivated in this country for a very considerable time, such as the rose, the elm, &c. without any apparent loss of vigour. These, we however are aware are propagated by an extension to the root; and this fact Mr. Knight seems to consider as likely to insure grafts a longer continuance of vigorous existence. Mr. Williamson, in a paper now before us, has in some degree controverted this position, that the cause of the diseased appearance of young grafted trees arises solely from the grafts being taken from old and decayed stocks. He states that, in the course of a few years, several young trees, which had been raised from seed, began to exhibit the same diseases, and to be affected by them in a greater degree than many of our older varieties; and that it is therefore evident that *old age* was not the only cause of these appearances. Mr. W. ascribes the premature decay to the supposed diminution of the warmth of our summers. As a confirmation of this, it is to be remarked, that the golden pippin, which with us has become a shy bearer, in France, where the climate is warm, is still considered as a very productive tree. Without entering farther into the discussion of the question, there can be no doubt of the fact, that several of the older varieties of our fruits have been gradually decaying; and we owe principally to the scientific exertions of Mr. Knight, the introduction of many new and excellent varieties, which supply the loss of the old; and, from the spirit which has arisen, every season will no doubt continue to increase our stock. Mr. Knight's theory, he conceives, is confirmed by *Columella* who seems to have known that a cutting of a bearing branch did not form a young tree; for, speaking of the cutting of the vine *Semina (he says) optima habentur à lumbis, secunda ab humeris tertia summa in vite lecta, quæ celerrime comprehendunt, et sunt feraciora—sed et quam celerrime senescunt.*

The inuring plants of warmer climates to bear, without covering, the frosts, the ungenial springs, and cold summers of this country, is a subject of considerable importance to the horticulturist. Little hitherto has been done in this respect with trees, be-

cause in general the propagation has been effected by cuttings or layers from the parent plant, which have therefore, in a great measure, retained its original habits; and we are now probably growing in our gardens the identical Laurel introduced by 'Master Cole, a merchant at Hampstead,' some years before the year 1629, in which old Parkinson published his *Paradise terrestre*.

Most of our present wall trees are merely continuations, by grafts, of trees raised in a warmer climate; and although it is not probable that either near London or Edinburgh the peach tree will ever be brought to bear fruit so perfect and so delicious as that which is ripened in warmer climates, much may be expected from the production of new varieties, raised in the manner suggested by Mr. Knight's experiments, to procure early fruiting apples, and which shall have the habit of enduring our rougher climate. It is probable, observes Sir Joseph Banks, that wheat, now our principal food, did not bring its seed to perfection in this country till hardened to it by repeated sowings; and though some spring wheat from *Guzerat*, which was sowed by him, eared and bloomed with a healthy appearance, many ears were, when ripe, without corn, and few brought more than three or four grains to perfection. Some seeds of *Zizania aquatica* were sown in a pond: the first crop produced strong plants and ripe seeds, the produce of which, however, was in the next year weak, and not half the size of the parent plants; but in each succeeding year they grew stronger, and in a few years attained their full size. Thus a plant, at first scarcely able to bear the cold summer of England, in fourteen generations became as strong and as vigorous as our indigenous plants.

III. The creation of hybrid or mule productions, from two plants of distinct species of varieties, by fecundating the blossom of one with the farina of the other, is also one of the ingenious devices adopted by Mr. Knight, in order to obtain varieties of fruit, partaking of the different qualities of the two parent plants. Mr. Herbert (Vol. IV. Part 1), as far as we can understand him, is persuaded that, by such intermixtures, new species may be created amongst vegetables, capable of continuing a distinct race by the natural descent of an unadulterated progeny to an indefinite extent, and without reverting to the single form of either parent plant. It is impossible to conceive any thing more improbable than such a position; and we entirely concur with the opinion intimated on this point in the *Botanical Register* (Vol. III. p. 195.), 'that no truly hybrid plant, under any circumstances, will continue an unadulterated descent through seeds beyond a very limited number of degrees; and that the less complete productions of this kind, such as take place between remarkable varieties of one species, revert to the single likeness of either one or the other parent, or assume new appearances in endless vicissitudes.'

Several hybrid apple trees, the produce of the Siberian crab, and the richest of our apples, have been the result of Mr. Knight's experiments; and which while partaking of the hardness of the Siberian crab, and ripening in cold and exposed situations, yet possess the fine qualities of the other parent. In some, the varieties inherit the character of the male, and others of the female parent, in the greatest degree; and from some varieties of fruit, particularly the golden pippin, a better copy was obtained by introducing the farina into the blossom of another apple, than by sowing the seed of it. The excellent variety called the Downton pippin, was obtained from the farina of the Golden, and the female flower of the Orange pippin.

We extract from the *Pomona Herefordiensis* the account given by Mr. Knight of the course he adopted in his experiments.

'Preparatory to these experiments, many varieties of the apple were collected, which had been proved to afford, in mixture with each other, the finest ciders. A tree of each was then obtained, by grafting upon a Paradise stock; and these trees were trained to a south wall, or, if a Siberian crab, to a west wall, till they afforded blossoms; and the soil in which they were planted was made of the most rich and favoura-

ble kind. Each blossom of this species of fruit contains about twenty chieves or males, and generally five pointals or females, which spring from the centre of the cup or cavity of the blossom. The males stand in circle, just within the base of the petals or flower leaves, and are formed of slender threads, each of which terminates in a small yellow ball or anther. It is necessary in these experiments, that both the fruit and seed should attain as large a size, and as much perfection, as possible; and therefore a few blossoms only were suffered to remain upon each tree, from which it was intended to obtain seed. As soon as the blossoms were nearly full grown, every male in each was carefully extracted—proper care being taken not to injure the pointals or females; and the blossoms, thus prepared, were closed again, and suffered to remain till they open spontaneously. The blossoms of the tree which it was proposed to make the male parent of the future variety, were accelerated by being brought into contact with the wall, or retarded by being detached from it, so those were made to unfold at the required period; and a portion of their pollen or farina, when ready to fall from the mature anthers, was, during three or four successive mornings, deposited upon the pointals of the blossoms, which, consequently, afforded seed. It is necessary, in this experiment, that one variety of apple only should bear in unmutilated blossoms; for, where other varieties are in flower at the same time, the pollen of these will often be conveyed by the bees to the prepared blossoms; and the result of the experiment will, in consequence, be uncertain and unsatisfactory.'

'Every seed, though many be taken from a single apple, will afford a new and distinct variety, which will generally be found to bear some resemblance to each of its parents. Examples of this are presented in the Grange apple and Downton pippin, and in the Foxley apple and Siberian Harvey.'

'After varieties are thus formed, the operator has still to wait long before he can estimate the success of his labours. A seedling pear tree does not often bear fruit till it is ten, and sometimes not till it is 16 to 18 years old; but a seedling apple tree will generally produce fruit at six or seven years old, and sometimes even at four, when either of its parents has been the Siberian Crab. The success of the experiment is also still uncertain; many of the new varieties will be worthless; and where the fruits are good, the trees will often prove unproductive, or defective in health and vigour; and the planter must think himself fortunate if, under the best management, fifty seeds afford a single fine variety for the press; though many will probably be above mediocrity.'

IV. Experience shows that the different varieties of vegetables, when long propagated, gradually lose some of the good qualities which they possessed in their earlier stages of existence. About fourteen years, it seems, is allotted to the duration of a variety in a state of perfection; and Mr. Knight has applied the principles before noticed to the production of new and early varieties of the potato. Observing that those varieties which were early, produced little blossom and no seed, he conceived this to arise from the nutrient being chiefly carried away to supply the tuberous roots (or potato) which are produced on runners, and are distinct from the fibrous roots. By destroying the runners, and only permitting the fibrous roots to grow, early blossom and perfect fruit was procured; from which new varieties were obtained, which in a great degree inherited the early habit thus given to the parent plant.

The trouble and the uncertainty, and the length of time which it was supposed was necessary for the production of varieties from seed, are the principal reasons why so little has hitherto been done: but considerable error and prejudice has existed on this subject. In New South Wales, a Peach tree (which arrives at puberty earlier than other fruit) is said to have borne at the end of sixteen months from the planting of the stone. In America, whole orchards of peaches are used for making brandy and feeding hogs; and these are always planted from the stone, and bear at the end of the third year. And a peach

stone planted by Mr. Knight in the middle of February, kept under glass, and frequently supplied with fresh manure, had, in the following autumn, formed blossom buds, capable, as he conceivid, of bearing fruit.

V. The construction and form of forcing-houses is an object of considerable importance, and hitherto appears to have been very defective; and two are rarely built alike, though intended for the same purposes. The object is to procure a building in which the greatest possible quantity of space has been obtained, and of light and heat admitted, in proportion to the capital expended.

The introduction of steam, in metal pipes, for the purpose of warming forcing-houses, instead of thick brick flues, and the improvement in the form, which admit of the ripening more fruit in a house built at a smaller price, render it probable that they will become much more common and that larger ones will be built, in which the tropical fruits may be ripened with facility; more especially as a greater and more regularly continued degree of heat may be furnished by steam at a comparatively trifling expense. Already the fruit of the *Grenadilla*, the *Loquat*, and the *Mango*, have been ripened in this country; and it is probable that, at no very distant period, the *Aki*, the *Avocado* pear, the *Flat Peach*, the *Mandarine Orange*, the *Litchi* of China, the *Mongosteen*, and the *Durion* of the East Indies, and other valuable fruits, will add to the luxury of the tables of the rich. One year in three has already been saved in the time of fruiting the *Pine*,—and the necessity of the use of tan in its cultivation in a great measure done away with, as stated by the president; and we are led to suppose that the time is at no great distance, when this expensive fruit will be no longer an object of rarity, from the cost of its cultivation.

Considerable difference of opinion exists as to the best form of a forcing-house. It is however evident, that when fruit is to be ripened in the same climate and season of the year, one peculiar form must be superior to every other; and that in our climate, where sunshine and natural heat do not abound, the form which admits of the greatest quantity of light through the least breadth of glass, and which affords the greatest regular heat with the least expenditure of fuel, must generally be the best. The sun, of course, operates most powerfully on the forcing-house, when its rays fall most perpendicularly on the roof; because the quantity of light that glances off without entering the house, is proportionate to the degree of obliquity with which it strikes upon the surface of the glass. Mr. Knight conceives the best elevation for latitude 52, to be that of about 34 degrees.

Hot-houses are comparatively of modern introduction, and were probably little, if at all used in this country, in the beginning of the last century. Lady Wortley Montagu observes, on the circumstance of pine apples being served up in the dessert at the Electoral table at Hanover (1716), as a thing she had never before seen nor heard of. Sir Joseph Banks has communicated some curious remarks on the subject of the forcing-houses and the fruits of the Romans, vol. i. 147.

* *Pallida ne Cilicum timeant pomaria brumam,*
Mordeat et tencrum fortior aura nemus :
Hybernis objecta notis specularia puros
Admittunt soles, et sine fæce diem, &c.
Martial, Lib. viii. 14.

Qui Corcyrae videt pomaria regis,
Rus, Entelle, tuæ preferat ille domus.
Invida purpureos urat ne bruma racemos,
Et gelidum Bacchi munera frigus edat;
Condita perspicua vivit vindemia gemma,
Et tegitur felix, nec tamen uva latet.

Fæmineum luet sic per bombycina corpus;
Calculus in nitida sic numeratur aqua.
Quid non ingenio voluit natura licere?
Autumnum sterilis ferre jubetur hiems.'

Ibid. viii. 68.

all probability describes a peach-house; and the word *Pallida*, which is meant as a ridicule on the practice, gives reason for this supposition; as we now know, that peaches grown under glass cannot be endowed either with colour or with flavour, unless exposed by the removal of the lights whilst the fruit is ripening; and, if this is not done, the best sorts are pale, green, and tasteless when ripe.

The second Epigram more plainly refers to a grape-house: contrived however, probably, for securing a late crop, rather than as a forcing-house; and the last line leads to this opinion.

Pliny also tells us, that Tiberius was fond of cucumbers, and had them in his garden throughout the year, by means of *specularia* (stoves), where they were grown in boxes, and wheeled out in fine weather.

Theoretical writers on vegetation, as well as gardeners, are apt to transfer the feelings of animal life to plants, whence arises the recommendation of hungry soils and cold situations for nurseries, seeing how agreeable it is to go from worse to better—and this feeling amongst gardeners has led to a mode of treatment of plants in forcing-houses directly contrary to nature—and as they like a warm bed in a cold night, and fresh air in a hot day, they are apt to treat their plants as they would wish to be treated themselves. But this is contrary to the mode of existence of the plants in a state of nature—and Mr. Knight conceives the consequence of this excess of heat during the night, in all cases injurious to the fruit-trees of temperate, and not at all beneficial to those of the inter-tropical climates.

In Jamaica, and other mountainous islands of the West Indies, the air upon the mountains becomes, soon after sun-set, chilled and condensed; and, in consequence of its superior gravity, descends and displaces the warm air of the valleys; yet the sugar canes are not injured by the sudden decrease of temperature. It must, on consideration, be obvious, that the more nearly nature in its best climates and most favourable seasons is copied as to temperature, the more perfect will be the production. As yet, according to the common practice, there is hardly a gardener who does not imitate, as he supposes, the cool evening dews of nature, by sprinkling his flues with water, and filling his house abundantly with steam—the one in fact resembling the sudden chill of the shower bath, and the latter that of the hot-vapour baths of Russia.

Mr. Knight, in his peach house, reduced the temperature to the natural state of the air during the night, except when there was an appearance of frost, and every evening sprinkled his peach-trees with abundance of water; and he states, that his fruit blossomed, set, and ripened more successfully than he had ever experienced it. Although the succulent shoots of trees always appear to grow more rapidly on a damp heat during the night, it is rather an elongation than growth. The spaces between the bases of the leaves, indeed, become longer, but no new organs are added; and it is in fact only the quantity of material extended to a greater length. Another of the ill effects of the high temperature during the night is, that it exhausts the excitability of the tree much more rapidly than it promotes the growth, or accelerates the maturity of the fruit, which is, in consequence, ill supplied with nutriment at the period of its ripening, when most nutriment is probably wanted.

VI. Sir Joseph Banks, some time since, published a pamphlet on the Rust or Mildew in Wheat, which we have already noticed,* and it contains strong evidence that this disease was a minute parasitic fungus, propagated like other plants by seeds. 'The evidence,' Mr. Knight observes, 'would I think be sufficient, if the means were ascertained by which the seeds of this species of fungus are conveyed from the wheat plants of one season to those of the succeeding year. This, however, has not been done; and some still consider that the mildew of wheat consists only of preternatural processes, which spring from a diseased action of the powers of life

in the plants themselves.* Assuming that the various species of fungus are propagated by seeds as the least objectionable hypothesis, Mr. Knight observes, 'it will not be difficult to shew that they are sufficiently numerous to account for the ubiquity of the plants they are supposed to produce; and as these apparent seeds are, by their lightness, capable of being every where dispersed by the winds, Mr. Knight from an experiment made by him on a mushroom, conceives that 250 million seeds were produced in 96 hours. He has endeavoured to point out some means by which the injurious effects of the common white mildew may be prevented. The secondary and immediate causes to him appear a want of sufficient supply of moisture from the soil, with excess of humidity in the air; particularly if plants are exposed to a temperature below that to which they have been accustomed. And it is observed, if damp and cold weather in July succeed that which has been warm and bright, without the intervention of sufficient rain to moisten the ground to some depth, the wheat crop is generally much injured by mildew.'

* I suspect that in such cases, an injurious absorption of moisture, by the leaves and stems of wheat plants, takes place; and I have proved that, under similar circumstances, much water will be absorbed by the leaves of trees, and carried downwards thro' their albuminous substance, though it is certainly through this substance that the sap rises under other circumstances. If a branch be taken from a tree when its leaves are mature, and one leaf be kept constantly wet, that leaf will absorb moisture, and supply another leaf below it upon the branch, even though all communication between them through the bark be intersected; and if a similar absorption takes place in the straws of wheat, or the stems of other plants, and a retrograde motion of the fluids be produced, I conceive that the ascent of the true sap, or organizable matter, in the seed vessels, must be retarded, and it may become the food of parasitical plants, which then only may grow luxuriant and injurious.

This is Mr. Knight's view of the subject; and whether correct or not, it is impossible not to see how much good must be derived from inquiries of this nature, pursued with such unremitting care and attention as is bestowed on them by the president.—In some experiments made on the cultivation of the pea, (a plant peculiarly subject to the mildew at the latter part of the year,) considerable quantities of water was given to the growing plants, and to the ground before the sowing; and all appearance of mildew was avoided. Several of the more delicate fruits now cultivated in this country cannot be made to produce, unless with the assistance of being trained against a south wall.

VII. The facts observed by Mr. Knight, with respect to vegetable physiology, have enabled him to improve much in the practice of training wall trees, which was irrational and defective—no attention having been paid to the form which the species or variety naturally assumed; and, as its natural growth upright or pendent, it was constrained to take the same form on the wall. From experiments, Mr. Knight inferred that none of the forms in which fruit-trees are generally trained, are those best calculated to promote an equal distribution of the circulating fluids, by which alone permanent health and vigour, and power to af-

* An hypothesis, differing little from his, has been published in the Quarterly Review, respecting the dry rot, or *Boletus Lacrymans* of Fimber, in which it is supposed the different kinds of fungus which appear upon decaying timber, are produced by the remaining powers of life in the sap of the unseasoned wood; and that the same kind of living organizable matter which, whilst its powers remained perfect, would have generated an oak branch, will, when debilitated, give existence to a species of fungus. It only requires to pursue this argument, to see its absurdity; which would soon arrive at the conclusion, that a mass of animal matter, as old cheese, might generate a mite—and a larger mass of decomposing animal matter, produce us elephants.

ford a succession of abundant crops, can be given. The principle of his improvements is, to expose a greater surface of leaf to the light, without placing any of the leaves so as to shade the others; and, by selecting the strongest and earliest buds towards the points of the year-old branches, and the weakest and latest near the bases, an equal vigour was thus given to each annual shoot; and when one grew with greater luxuriance by being depressed, and the weaker elevated, they acquired an equal degree of vigour. In France there is an annual publication, called *Le Bon Jardinier*, which contains much useful information on practical gardening; and we trust, before long, that a similar publication will be produced in this country, under the auspices of the Horticultural Society. In addition, however, to the difficulties arising from the climate, the French materially surpass us in several branches of horticulture; and one of their principal means of success is the division of labour, which has not yet been adopted in this country. In France, whole villages are employed in the cultivation of one single sort of fruit; and, consequently, the whole attention of individuals, for generations, is directed to one point only. At *Montreal*, the whole population has been long maintained by the cultivation of peaches,—their sole occupation: and the inhabitants of *Argenteuil* derive their chief support from the cultivation of fig-trees. Near the town, are immense fields covered with these trees on the sides of hills facing the south, and in other places sheltered from the north and south-west; and it is at these towns alone, perhaps, that the true management of these delicious fruits can be acquired.

Next in interest to the papers by the President, are those contributed by Mr. Sabine the secretary, and by the late Sir Joseph Banks, who was indefatigable in his exertions to promote the interests of the society.* We cannot conclude our observations, without recommending that those entrusted with the selection of the papers for publication should in future be somewhat more careful, or at least more sparing in their choice: for though there are many containing useful practical information, yet there is much that might have been omitted; and we confess, that had we, in the early part of our examination, stumbled on some of Mr. R. Salisbury's long papers, or the account of Mr. Seaton's invention of 'marked tallies, or garden sticks, accompanied by a plate,' it is most probable we should have been deterred from all further progress; in which case, our general readers would have remained ignorant of the Theory of hybrid plants, and the whole mystery of the propagation of apple-trees, whether by seeds or grafts.

* All must regret the recent loss of the late venerable President of the Royal Society. The annals of science do not perhaps afford an instance of a man who so entirely devoted his time, talents and fortune, to the advancement of knowledge. At his entrance into life, succeeding to a splendid inheritance, he turned aside from the paths of pleasure, and the usual pursuits of his age, to become the companion of Cook; and scarcely arrived at manhood, was a sharer of the fame of that illustrious navigator.

The zeal and eagerness with which he pursued all subjects connected with science, continued one of the most striking features of his character; and at an advanced age, and although long suffering under the most painful diseases, the freshness and vigour of his mind, and his interest in those subjects were unabated. His valuable collections, and his unbounded stores of information, were at the service of all. His library (the richest perhaps in Europe on subjects of natural history) was of far more easy access than any other public library in England. His unostentatious readiness to supply the pecuniary wants of scientific persons will, we are persuaded, long live in the memory of many. No one perhaps, in our time, has gained such universal and unmixed admiration and esteem; unconnected with politics or party, he neither entrenched upon the interests, nor interfered with the prejudices of any. It will be long indeed before one shall be found capable of filling the vacancy made by his death—'Artium tum utilium, tum elegantiorum judex et patronus!'

PISE,

Or the Art of Building strong and durable Walls, to the Height of several Stories, with nothing but Earth, or the most common Materials. Drawn up and presented to the Board of Agriculture, by Henry Holland, Esq.

[Continued from No. 3, page 21, volume III.]

Of Pisé and its Origin.

CHAPTER IV.

Method of forming the openings for the doors and windows.

The openings for the doors and windows must be left at the time of building the walls. This may be done by placing within the mould either two or one of the heads (such as is represented, Plate I. figure 3 and 4) as may be necessary, wherever the wall is to terminate and the opening commence. They should be made sloping a little, in order to leave room for the frames and sashes.

The exterior decorations of the windows and doors are usually made, by the rich, of stone or brick, and by the poor, of wood, which latter have a bad effect on the appearance of the house, as wood will never unite well with pisé-work; and notwithstanding the greatest precautions, the exterior covering will break and fall off the wood; whereas stone or brick work unite perfectly with the pisé, and retain their plaster, and of course the paint, of which it forms the ground. The chimney-pieces of brick or stone are laid and united with the walls in the same manner as in common buildings; and the flues are also very firmly connected with them, being made of brick-work. But a very particular advantage is, that the apartments may be very handsomely finished, without making any jambs to the inside doors, either of stone, brick, or wood. The finishing of the earthen wall will make jambs unnecessary; and why should the expence of any other finishing be incurred, when the doors may be hung on the grounds, or wainscot of the apartment?

CHAPTER V.

On the effects of beating or compressing earth, cement, or other compositions used in building.

Beating, or compression is used in many different sorts of work; the ancients employ it in making their rough walls; the Italians employ it for the terraces which cover their houses; the Moors for all their walls; the Spaniards, the French, and others, for some of the floors of their apartments. The intent of the ancient architects, when they recommended the beating of cement and other compositions used in building, was to prevent them from shrinking and cracking; and it is employed for the same purpose in walls which are made of earth. The beater, by repeated strokes, forces out from the earth the superfluous water which it contained, and closely unites all the particles together, by which means the natural attraction of those particles is made powerfully to operate, as it is by other natural causes in the formation of stones. Hence arises the increasing strength and astonishing durability which houses of this kind are found to possess.

CHAPTER VI.

On the description of compressed earth.

Upon beating a small portion of earth, and weighing it immediately afterwards, it was found to contain thirty-nine pounds and a half; fifteen days after it had lost four pounds and a quarter; in the space of another fifteen days it had lost but one pound; and in fifteen days after that its weight diminished only half a pound. In the space of about forty-five days the moisture was completely evaporated, and its weight was diminished above one-eighth; consequently only one-eighth of the whole mass was occupied by moisture, and this small proportion cannot at all affect the solidity and consistency of the

earth so treated. This experiment is also sufficient to shew the difference between this kind of building, and that vulgar kind, called in England, "mud walling; the latter cannot be executed without adding a great deal of water, to soften the materials employed, which entirely destroys their consistency; the water, which occupies a considerable space in the mud, leaves, in evaporating, an infinite number of pores or little cavities, and thus the walls become weak and brittle, and incapable of supporting several stories, or such ponderous weights as the beaten earth or pisé can sustain.

CHAPTER VII.

On the height of pisé walling that may be executed in one day.

In one single day three courses of about three feet each may be laid one over the other; so that a wall of earth of about eight or nine feet, or one story high, may be raised in one day. Experience has proved, that as soon as the builders have raised their walls to a proper height for flooring, the heaviest beams and rafters may without danger be placed on the walls thus newly made; and that the thickest timber of a roof may be laid on the gambles of pisé, the very instant they are completed.

CHAPTER VIII.

On earth proper for building.

1st. All earths in general are fit for that use, when they have not the lightness of poor lands, nor the stiffness of clay. 2dly. All earths fit for vegetation. 3dly. Brick earths; but these, if they are used alone are apt to crack, owing to the quantity of moisture which they contain. This, however, does not hinder persons who understand the business from using them to a good purpose. 4thly. Strong earths, with a mixture of small gravel, which for that reason cannot serve for making either bricks, tiles or, pottery. These gravelly earths are very useful; the best pisé is made of them. These general principles may suffice, without overburdening the memory of the reader; and from the following marks may be known, what earths are fittest to be employed by themselves.—When these have been described, it will remain to point out such as must be mixed with others, in order that they may acquire the necessary quality.

The following appearances indicate that the earth in which they are found is fit for building: when a pick-axe, spade, or plough brings up large lumps of earth at a time; when arable lands lie in ciobs or lumps; when field mice have made themselves subterraneous passages in the earth; all these are favourable signs. When the roads of a village, have been worn away by the water continually running through them, are lower than the other lands, and the sides of these roads support themselves almost upright, it is a sure mark that the pisé may be executed in that village. One may also discover the fitness of the soil, by trying to break with one's fingers the little ciobs of earth in the roads, and finding a difficulty in doing it; or by observing the ruts of the road, in which the cart-wheels make a sort of pisé by their pressure; whenever there are deep ruts on the road, one may be sure of finding abundance of proper earth.

Proper earth is found at the bottom of the slopes of low lands that are cultivated, because every year the rain brings down the fat or good earth. It is frequently found on the banks of the river; but above all, it is found at the foot of hills where vines are planted, and of all cultivated lands which have much slope. In digging trenches and cellars for building, it generally happens, that what comes out of them is fit for the purpose.

CHAPTER IX.

On the mixture of earths.

As it may sometimes happen that earth of a proper quality is not to be found on the spot where it is intended to build, it becomes of importance to attend to the method of mixing earths; for though the earth, which is near at hand, may not of itself be proper, it is very probable that it may be rendered so, by the mixture of a small quantity of another earth, fetched from a distance. The principle on which a mixture must be made is very simple; strong earths must be tempered with light; those in which clay predominates, with others that are composed more of chalk and

sand; and those of a rich, glutinous substance, with others of a poor and barren nature. The degree in which these qualities of the earths prevail, must determine the proportions of the mixture; which it is impossible here to point out for every particular case, but which may be learnt by a little practice. Some easy methods will be described in the next chapter, by which any one may make a trial of the qualities of his earth.

It will not be amiss to mix with the earth some small pebbles, gravel, rubbish of mortar, or in short any small mineral substances; but none of the animal or vegetable kind must be admitted.* Such hard substances bind the earth firmly between them, and being pressed and pressing in all directions, contribute very much to the solidity of the whole; so that well worked earth, in which there is a mixture of gravel, becomes so hard at the end of two years, that a chisel must be used to break it, as if it was free-stone.

(To be continued.)

* The pise does not admit any vegetable or animal substances. In mud walls they put straw, chopped hay, hair flocks, wool, &c. to make the mud adhere to the wood, or laths: whereas the workmen who build in pise are careful to pick out the least straw, or the smallest bit of root which remains in the earth—in short, the pise is a mineral substance imitating stone, consequently, any thing that can slake or rot must be excluded.

For the American Farmer.

Philadelphia, April 4, 1821.

SIR,
You deserve so well of your country for the happy thought of publishing a Gazette exclusively devoted to the cause of the first of employments, for the talents and zeal exhibited in conducting it, and further exertions to aid agriculturists in improvements, particularly in stock; that you have a just claim upon every one who is able to give any information you may desire. I am happy in having it in my power to satisfy your inquiries respecting the Teeswater breed of cattle, about which and the Holderness, as you observe, much confusion prevails.

It is agreed among British writers on agriculture that they owe the short horns, to the Dutch, and for sometime after they excited attention in England, they bore the name of the Dutch breed: but the precise part of the low country whence they came, the time of their importation, and the name of the importer do not appear. It is known however, that they were first "located" in Yorkshire, and from their being chiefly confined for sometime to the Eastern part of the country, they obtained the name of the "Holderness" breed. Their forms were bad; Lawrence says that "they had long gaunt deep carcasses without adequate subsance, placed upon high stilts of the coarsest timber, slow feeders, never fat, and the flesh excessively coarse."** The cows gave a great quantity of thin milk, and hence were much in demand with the cow keepers in the vicinity of London, with whom quantity and not quality is the object. The intelligent breeders must nevertheless have seen something in the form of those beasts, or have witnessed such improvements in their progeny, from accidental or designed mixtures with native stock, as to convince them, that they possessed a plasticity

which would permit the breed to be moulded into better forms than it originally had. Laurence says further, that "the coarseness and size of the northern short-horns, led to the introduction of Norman bulls sometime in the eighteenth Century," and that this improvement commenced in England in the district last named. This cross, without doubt increased the rich quality of the milk, the cattle of Normandy being famous for the richness of that secretion.† Judicious mixtures with other and better formed animals, particularly with bulls from the river Tees, according to Tuke, continued to improve the race until they have reached what may be called the ultimatum of animal perfection. They are models of symmetry, fatten readily, and at three years will weigh with fair keep, as much as other breeds do at double that age, and after a long and expensive process of stall feeding, or extra feed in summer. Much of the high character which this breed has deservedly acquired, was derived from the intelligence and zealous perseverance of Messrs. Robert and Charles Collings, of Bampton, & Ketton, Co. Durham, on the Tees, a river that divides the "north riding," of the county of York through its whole extent from that of Durham. The multiplication and improvement of the breed in their hands, and by others in the same district, gave a name to the variety produced by their care, derived from the river just mentioned; and it is this variety that is now so eagerly sought after in England and Ireland, and to which I have several years since,‡ and more recently called the attention of American improvers. The diffusion of the breed, in the adjoining county of Durham, has stamped it with that name also. In all the crosses and changes to which the original stock have been subjected, the short horns have almost invariably been preserved; a circumstance that shows the distinctive and permanent character of the breed. Thus the way is rendered clear, and there cannot be any longer the least obscurity respecting the various names that are given to the short horned stock. Nor must these names be deemed synonymous, for the peculiar characters of the progressive varieties, for certain reasons are still retained in some districts.—

Thus the London Cow-keepers encourage the farmers of Holderness to preserve their large big boned breed, because the cows are profuse milkers, from twenty-five to thirty five quarts being the average produce per day from a single cow. Improvers should be careful to ask for "the improved short horns," when they order any of the breed from England, and be particular in dealing with men of high character, who are known to be attentive in preserving the purity of their blood. Mr. Champion's stock is from Comet the paragon of the stock of Charles Collings. The colour is red and white, often mixed in the most beautiful proportions and forms. The agricultural society of Philadelphia, have two coloured prints taken from portraits of Day's famous Durham Ox, and the Bull Patriot, which show this mixture, and cannot be viewed by an amateur without expressions of delight.

† A lady and gentleman who travelled through France a few years since, and supped on bread and milk, informed me, that they discovered the fact of their having passed through Normandy, by the inferiority of the milk, the first night they stopped after leaving that Province.

‡ Archives of useful knowledge, vol 1, 1811.

The great, the important points in this breed, are, early maturity, quick fattening, and the disposition to throw the fat and flesh upon those parts of the carcase that sell for most money, while those technically called offal are very small. In my late paper read before the Philadelphia Society for promoting agriculture, which was published in the "National Recorder," of Philadelphia, a weekly paper, on the 24th March last, I have given the weights of several oxen of this breed, belonging to Mr. Nicholson of Gipton, near Leeds, and Mr. C. Champion of Blythe near Bawtry, Nottinghamshire, and to show that those weights are not uncommon, I will furnish a few more. Culley§ says that an Ox, five years old, killed at Barnard castle in 1789, weighed, the 4 quarters, 150 stones, and $4\frac{1}{2}$ lbs at 14lb. to the stone = 210 $4\frac{1}{2}$ lbs, his tallow weighed 16 stones = 224 lbs. Another cow (age not given) weighed 150 stone and 3 lbs. = 2103 lbs. with 16 stones of tallow—224 lbs.

A six years old spayed heifer, 132 stones, 16 lbs. = 1854 lbs. Tuke in his "Agricultural Survey of the north Riding of Yorkshire," the country of the short horns, says, that a Cow bred by J. Dowker of Salton, and killed in the spring of 1793, then five years old, weighed, the 4 quarters 90 stone = 1260 lbs. She measured nine feet seven inches round the hind ribs, and two feet 4 inches across the hips.

A heifer, 4 years old, belonging to E. Cleaver Esq.|| and killed in 1799, weighed, the four quarters, 90, stone 6 lbs. = 1392 lbs. Tallow 9 stones 8 lbs. = 134 lbs.

A five year old hornless cow, bred near Bedale, Yorkshire, weighed 85 stones, = 1190 lbs.

The Durham Ox, a prior of which is in the Agricultural Society's room, Philadelphia, weighed alive by computation 2394 lbs. at 6 years of age.

So much for their history and weights. With all the great merits of "the improved short horns," they will I fear be thought not entirely free from faults. The truth is, they must have food; they are most hearty eaters, and justly do they deserve the best pasture that can be given them, for no beasts pay better or sooner for what they eat. They will not fatten or even live on Tobacco stems, or Indian grass, or garlic, or spring sprouts from trees in the woods, or the sparse natural growth of a pine forest, however extensive the "range" may be, and notwithstanding it has been prepared for them, by the happy and ingenious expedient of burning the dead vegetable starvelings on the surface, the growth of the preceding year. Nor will they stand the nibbling and torment of countless myriads of gnats and mosquitoes in a marsh in summer, (for their hides are remarkably thin,) or thrive or preserve their health, if turned out to shift in the winter among dead corn stalks, without a shelter at night. Improvers therefore who intend that the above shall be the fate of the "short horns," had better adhere to the hardy native stock, accustomed to such fare, and of which it is well known, half a dozen cows, will furnish milk enough when "in profit," for a small family for tea and coffee. But give the short horns proper treatment, such as they deserve, keep them in a

§ On Live stock.

|| One of the reporters employed some years since by the British Board of Agriculture to survey the kingdom.

¶ Of which Tuke gives a plate, and copied in Dickson's agriculture, and the "Complete Farmer."

* Laurence on Cattle—what a description! Some of this sort were imported before the American war, into this country, but now, are happily gone.

continual state of improvement and growth while calves, and furnish them with abundant pasture in summer, and good hay and comfortable quarters in the winter, and I will answer for full satisfaction being derived by every one who will make the experiment with them.

I assure you I did not intend to write so long a letter, but when once in the strain, it is difficult to stop. I cannot conclude without saying a few words on the North Devons. The merits of this breed are well known, and properly estimated in England. They are good milkers, and make excellent beef, and the best working oxen of any breed; walking as fast as a horse. Lord Somerville, did all the ploughing of a large farm with them: he and Mr. Conyers,* have given the fullest account of their good qualities. Mr. Coke deserves the everlasting thanks of every true friend to the agriculture of the United States, for his generous present to Maryland of his improved specimens of the breed, and I look forward with pleasure to the time when their descendants shall be diffused throughout the farming districts of the country. No agricultural society, especially of Maryland, ought to meet, without calling to mind Mr. Coke in some way: by drinking his health if the members please, or by annually publishing the state of the stock he sent over, their increase, and the names of those who have their progeny. The last measure ought certainly to be adopted in Maryland.

I hope the farmers of your state will avail themselves of the opportunities which you offer them, to add to their comforts and wealth, by the improvement of their farm stock. The idea of the establishment was a most fortunate one, and two gentlemen will enable you to accomplish, what in Europe has been always done at the expense of Kings. **WHAT PRAISE IS DUE TO SUCH GENUINE PATRIOTISM!** Your friends will forever be ranked among the most **SOLID BENEFATORS** of our COUNTRY.

With my best wishes, for your success,
I am respectfully,
JAMES MEASE.

* Communication, Board Agriculture, London vol. 4.

Ten North Devon cows of Mr. Conyers, produced on an average five dozen pounds of butter per week, in the summer, and two dozen in the winter, or in other words 218 lbs. per cow. His 30 cows in 1802, averaged an annual profit of £13 14s. or \$60 52, per head.

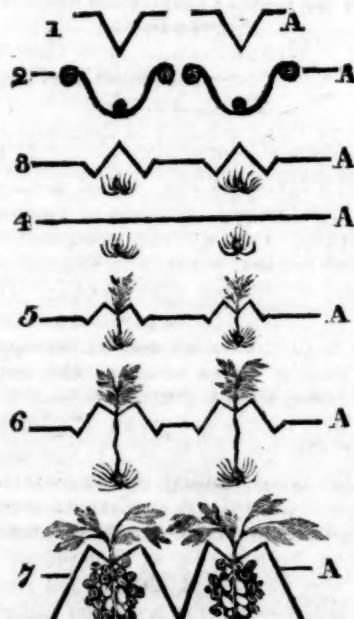
See also the strong testimony in favour of the North Devon, for activity, quick feeding, beef, and milk by Mr. Chandler of Moreton, a well known grazier, who has often obtained premiums at the Smithfield cattle shows,—Archives of useful knowledge, vol. 1, p. 303.

For the American Farmer.

Friend Skinner—Having read in your American Farmer several communications on raising potatoes, and none of them corresponding with my method, and convinced from seven years experience of the superior crops I have uniformly raised has induced me to give you my mode of managing the crop.

I always plough my stalk ground as deep as possible in February for my potato patch, in May I harrow the patch and roll it until it is quite smooth; it is then ready for planting (which I do immediately after planting corn.) I make

drills by a bout with a large plough three at a time only, then drag a log four feet long and 13 inches in diameter with a large chain twisted in a spiral form round the log up and down each drill, the log is square at the end, which throws the mould on each side the drill, the chain rubbing the mould as fine as the covering of a hot bed; by the time these three drills are ready the cart arrives with the dung, which is thrown in the drills and broke and spread evenly in the drill, “the seed (which has been cut two or three weeks, and plaster sprinkled on them wher. cut,” is dropped nine inches apart, and trod by the boy who drops them into the dung, as soon as the three rows are ready, the plough covers the seed and dung with the fine mould the log threw on each side the drill, the whole patch is thus planted; I have put in an acre in a day with two carts, a loader, one plough, three men and a boy to drop: I pick the best shaped and largest potato for seed and cut them in three or four pieces. I have tried whole potatoes and found no advantage in any respect. I have never measured my whole crop, but from the cart loads, I estimate my average crops 450 bushels per acre; I once planted five bushels of the Nova Scotia blue nose (the first I ever tried of that kind) and had 260 bushels of picked potatoes, and about five bushels of small, since I have planted no other kind for my late crop, being convinced they are the most prolific of eight varieties I tried for three years; the after culture is very similar to earthing and blanching celery, and on this depends the crop, as much as a corn crop would in a dry hot summer. I cannot give you a clear idea without the annexed sketch :



1. Drills made with the plough.
2. Log and chain, dung and seed.
3. Covered.
4. Harrowed level, after the first rain and before the plants are up.
5. First ploughing.
6. Second ploughing.
7. Third ploughing.

A is the surface of the field before making the drills.

The drills are 4 feet from centre to centre, after the seed are up, as fig. 5th I run a triangle harrow between each drill and throw a very light furrow to the plant with a small plough. Two weeks after harrow again and throw a heavier furrow to the plant as fig. 6th, and before the tops get too large harrow again with a large plough with a thin piece of board fixed to the extremity of the mould board finish the work as fig. 7th. Fifteen large ox cart loads of manure is all I use for one acre and fifteen bushels of seed cut in three or four pieces. I have observed the growth and find the potatoes arranged as fig. 7th. Having dug several hills with my fingers, beginning at the side, and in two seasons have had the potatoes bursting the ground at the surface when the lowest was 11 inches underneath; after the first frost, I mow the vines and haul them off to my compost heap; and when the ground is dry take up the crop, by ploughing a furrow from each side of the row, and turning the middle over, my expense of the whole crop, from hauling the manure till the potatoes are in the cellar, is 15 dollars per acre, and have had 265 bushels on $\frac{1}{3}$ of an acre—to illustrate the advantage of often stirring the ground during the growth of escarole in a dry season, I planted in 1816 two cabbage beside each other, they were from the same seed bed and each manured with an equal weight of old hot bed dung—one plant I hoed every evening, the other when the principal crop was hoed; in November they were weighed, one 24 lbs. the other 43 lbs. of the flat dutch kinds; other experiments prove that often working the ground, will double any crop in a dry season.

THOMAS MASSEY.

Roseville, Delaware.

MILLET,

The various kinds. with remarks on—from a friend in Virginia, April 9th, 1821.

TO THE EDITOR.

DEAR SIR—

In reply to your enquiry concerning the cultivation of Millet in this part of the country, and whether there are more kinds than one, I can state nothing with certainty, except that it has never been raised here as a crop. Several kinds of grain are sometimes made on a small scale, which appear to be varieties of Millet, but so loose and contradictory are the accounts that I have been able to obtain on the subject, that I remain in doubt whether any of them can properly come under that name. The varieties referred to are, 1st. White Millet, or Guinea Corn, with a naked white grain.—2d. Black Millet or Chocolate Corn. 3d. Red Millet or Broom Corn, resembling the preceding, except that the grains are more thinly scattered, and are covered with a red instead of black husk; and 4th, the plant producing the inclosed spike. None of these grains are the same with the Millet raised in Pennsylvania, of which a few bushels were lately brought to Petersburg. Only two varieties of Millet are mentioned in Miller's Gardener's Dictionary, neither of which agrees precisely with either of those known here, though his

description of that kind, which is so important an article of food in Africa, suits the general appearance of the White Millet in every respect, except the superior size of the latter plant, and the different colour of the grain. Of the botanical description which he gives, I know nothing. If there were 6 or 7 varieties of Millet, it is not probable that only two would be spoken of in so comprehensive a work; and yet if our Guinea corn is one of them, there can be but little doubt but that the other three kinds belong to the same family. The plant from which the inclosed seed were obtained, grew in Petersburg, and from its size and the rapidity of its growth, promised to prove next in value to the celebrated Guinea grass, which it much resembles. A closer examination, however, satisfied me that it is a grain instead of a grass, for there is not more difference between it and white millet, than between the smallest and largest kind of Indian corn.

White millet would be a very productive and valuable crop, but for its disposition to rot, if not gathered soon after ripening; and the heads come to maturity in succession, so as to prevent the whole crop being secured at one operation. Black millet is not liable to that objection, and appears to be equally productive. The small quantity made by me last year, was carelessly allowed to be exposed to the weather until January, and is not at all damaged. This is the kind, I presume, of which Dr. Coleman gives so satisfactory an account, (in your 47th No.) both with regard to its productivity and nutritious qualities. If the hardness of the husk does not render boiling or grinding indispensable, and if the stalk and blades are equal to those of corn, it must be superior to all other crops for feeding stock.

This certainly is not a subject of the highest order—but by ascertaining and informing us, to what plant the name of millet properly belongs, and of its value and cultivation, you may probably serve others among your readers besides myself, and will at least remove something of the confusion which reigns in our agricultural nomenclature. Your's respectfully, &c.

EDMUND RUFFIN.

For the American Farmer.

RECIPES.

[TRANSLATED FROM THE FRENCH.]

How to make a mattress that shall not sink in the middle, or become hard by the weight of the body.

To produce this effect, make your mattress twice as long as usual—double it—sew the two ends together, and arrange the stuffing where it joins the same as the rest. It will then have the form of a roller or double towel, which may be rolled forever and will always remain doubled and folded. When you put it on the bed it will be the same as two mattresses, one over the other. It takes no more ticking or stuffing for this double mattress, than for two single ones.

The advantage of this invention is, that every time the bed is made, you may easily roll the mattress so that the part which was under the body, may be placed at the head or feet; sometimes above, and sometimes below, and success-

sively every part of the mattress made to pass to those places where the compression is greatest. You may even from time to time, turn it inside out like a stocking, and by this means produce other changes. A mattress made in this manner, lasts much longer and is much easier to sleep on than one made in the usual way.

A certain method of Securing Horses from Flies and all other Insects.

It consists in rubbing them every morning with walnut leaves.

Extract of a letter from a correspondent of great observation, dated,

RALEIGH, April 6th, 1821.

DEAR SIR.—Conformably to a request in the last Farmer, I send you some melon seeds, obtained, my wife informs me, from the best melon she ever saw; a very large blue skinned one, brought to market here last autumn while I was in the Chickasaw country.

I would observe here, that melon seeds ought every year to be sent from the south, northwardly. In Massachusetts, melons from native seeds are small and insipid, but from North Carolina seed are five or six times larger, and of greatly superior flavour. I am in the habit of sending seeds to my friends there, annually. They deteriorate rapidly, and the third year, exhibited no evidences of their superior stock.

Corn, (Maize) on the other hand, should be sent from the North, Southwardly. The product is more grain and less stalk. The peregrination of other seeds might improve their products, but I have experienced only of these."

MIDDLEBURG, April 12th, 1821.

Extract of a letter—Information Wanted, Tin Roofs, &c. &c.

As every thing relating to domestic economy seems to come within your province, I should esteem it a favour if you would ascertain and communicate to me, the cost of roofing buildings with tin. I have understood that this plan of covering houses, prevails in some places, and is considered cheaper than wood. The tin is painted on both sides to prevent rusting. My object is to ascertain the cost by the square foot, so as to enable me to compare the expense of such covering, with a shingle roof—if the difference in first cost is not great, I should, on account of the greater security against fire, as well as for the durability of the materials, give a preference to tin. A gentleman from Staunton, Virginia, informed me that some experiments had been made at that place, and the opinion was expressed that a tin roof would cost but little more than a roof of shingles. He, however, could not speak with certainty, but understood that the operator there, had derived his knowledge from Baltimore, or some of the large commercial towns to the north or east.

I am, Sir,

Your obedient serv't.

From a new volume of "Poems, by one of a Family Circle."

The motto of the following poem is "Si desris pebro;" the description which it contains of a young

woman who is supposed to have died broken hearted, is touched in many parts with uncommon tenderness.—*British Critic* for December.

"He seemed to love her, and her youthful cheek
Wore for a while the transient bloom of joy;
And her heart throbbed with hopes she could not speak,
New to delight, and new the ecstasy,
He won that heart in its simplicity,
All undisguised in its young tenderness;
And smiling, saw that he, and only he
Had power at once to wound it or to bless.

She gave to him her innocent affection,
And the warm feelings of her guileless breast;
And from the storms of life she sought protection,
In his dear love, her home of earthly rest:
In this sweet trust her opening days were blest,
And joyously she hailed her coming years;
For well she knew that even if distrest,
There would be one kind hand to dry her tears.
He left her and in trouble she awoke
From her young dream of bliss; but murmured not
Over her silent sufferings, nor spoke
To any one upon her cruel lot.
You would have deemed that he had been forgot,

Or thought her bosom callous to the stroke;
But in her cheek there was one hectic spot,
'Twas little—but it told her heart was broke.
And deeper and more deep the painful flush
Daily became; yet all distress seemed o'er
Save when the life blood gave a sudden rush,
Then tremble into silence as before.
At once too proud, too humble to deplore,
She bowed her head in quietness;—she knew
Her blighted prospects could revive no more;
Yet was she calm, for she had Heaven in view.
She loved, and she forgave him—and in dying,
She asked a blessing on his future years;
And so she went to sleep; meekly replying
Upon that power which shall efface all tears.
Her simple turf the young spring flow'ret wears,
And the pale primrose grows upon her tomb;
And when the storm its simple blossom tears,
It bows its head—an emblem of her doom!

THE FARMER.

BALTIMORE, FRIDAY, APRIL 20th, 1821.

TO CORRESPONDENTS.

Numerous communications are on hand, and will appear as soon as possible. We return our sincere thanks to those, whose correspondence, has enabled us to give practical information on useful subjects—and take this occasion to repeat, that those, especially who send us communications, have a right to call for information on any agricultural subject—and we have experienced a very laudable readiness, to answer to enquires which have been thus propounded.

As many of the subscribers to the Farmer, residing in the country, have no agent to whom they can send the second volume to be bound, they are at liberty to command the services of the Editor in this respect, who will take pleasure in serving them.

Cattle Show and Fair, for the exhibition and sale of all kinds of Live Stock, Agricultural Implements, &c. &c. to be held on the 7th and 8th days of June next, at the MARYLAND TAVERN, four miles from Baltimore, on the Frederick Turnpike Road, to commence at 9 o'clock, A. M. on each day

The Committee appointed on behalf of the "Maryland Agricultural Society," to make arrangements for a Cattle Show and Fair, for the sale of Live Stock and Agricultural Implements, have resolved that said Show and

Fair be held at the time and place above mentioned, and that the following premiums be offered :

FOR HORSES.

For the Stallion best calculated to improve our stock of coach horses, a silver pitcher valued at

For the Stallion best calculated to improve our stock of horses for the saddle, and for general farming purposes, a pair of silver goblets valued at

For the best Brood Mare, a butter boat valued at

ASSES AND MULES.

For the best Jack-Ass, a silver Can valued at

For the best Jennett do. do. do.

For the best Mule of any age, a pair of silver goblets valued at

NEAT CATTLE.

For the best Bull, not less than two years old, a pair of silver goblets, valued at

For the best Milch Cow, a pair of silver tumblers, valued at

For the best yoke of working Oxen, six table spoons, valued at

For the best Bull Calf, under two years old, a silver Can valued at

For the best Cow Calf under two years old, a silver Cream Pot valued at

HOGS.

For the best Boar of any age, a silver goblet valued at

For the best breeding Sow, do. do. do.

SHEEP.

For the best Ram of the pure Merino breed, a silver Can, valued at

For the best of any other breed, a silver butter knife, valued at

For the six best fat weathers—mode of feeding to be communicated—a silver Can, valued at

The above premiums will be awarded only for animals bred within the State of Maryland, or the District of Columbia.

Four premiums are reserved to be distributed at the discretion of the society, for objects not embraced under the above specifications, and which may yet appear worthy of distinction.

It is understood that whenever, merely from the want of competition, any of the claimants might be considered entitled to a premium, yet if, in the opinion of the judges, the objects so offered possess no particular merit, the Judges shall have a right to withhold such premium, and the society may confer it in any other case at their discretion.

Persons intending to offer any species of Stock for premium, are required to give notice thereof on or before the 6th day of June, either personally or by letter, addressed to JOHN S. SKINNER, Esq. Post-Master, Baltimore—specifying the premium for which they propose to contend. The applicants will be held to a rigid compliance with this rule. The examination of every species of Stock by the judges, to be then appointed, will take place on the first

day of exhibition, and the premiums be declared and delivered on the second day.

All persons, whether members or not, are at liberty to bring Stock, such as horses, milch cows, working oxen, fat bullocks, hogs, sheep, &c. &c. &c. either as subjects for premium, or for sale, private or public—and an auctioneer will be employed by the Society to dispose of such as may be offered at public sale.

CHARLES RIDGELY, of HAMPTON,
Chairman of the Committee of Arrangement.

P. S.—The Society request the favour of all Editors of papers in the State of Maryland, the District of Columbia and the adjoining States to give the preceding Notice a few insertions.

** The Horses, CLIFTON and YOUNG TOM, and the Jack SANCHO, will stand also at Mr. Caton's Mill, 9 miles from Baltimore, on the Falls Turnpike Road—of the days, &c. &c. a more particular notice will be given in our next.

** The index and title page to the second volume of this journal, are in the hands of the printer, and will be ready by this day week.

** All postmasters are respectfully requested to return, accompanied with a line of information, all numbers of this paper which are not taken from their offices by the persons to whom they are addressed.

For the accommodation of persons in the City and its immediate vicinity—the Teeswater, Devon and Alderney Bulls, will be moved in from the stock farm to the precincts of the town, where they will be let to cows every other week, during the season—particulars hereafter.

Subscribers to the AMERICAN FARMER can have either of the volumes well bound for 75 cents, by J. ROBINSON, Printer, corner of Market and Belvidere-streets

AGRICULTURAL LIBRARY.

RARE, VALUABLE AND CHEAP AGRICULTURAL BOOKS, FOR SALE BY

EDWARD J. COALE,

Opposite the Post-Office, Baltimore.

KAMES' Gentleman Farmer.

Farmer's Calendar, or Monthly Remembrancer for all kinds of Country Business, &c.

PETERS' Agricultural Enquiries.

Domestic Encyclopædia.

Agricultural Prize Essays and Transactions.

Complete Farmer.

YOUNG'S Agricultural Tours, North, South and East—9 volumes.

YOUNG'S Travels through France—2 vols.—4to.

BATH PAPERS.

The Complete Grazier, or Farmer and Cattle Dealer's Assistant. 3d edition.

The Farmer's Guide in Stocking Farms.

DAVY'S Agricultural Chemistry, with Plates.

MARSHAL'S Rural Economy.

SOMERVILLE'S Board of Agriculture.

REGISTER OF ARTS.

DARWIN'S Phytologia.

EPITOME OF FORSYTH ON FRUIT TREES.

MEMOIRS OF THE AGRICULTURAL SOCIETY OF PHILADELPHIA—4 volumes.

NICHOLSON'S Farmer's Assistant.

TAYLOR'S Arator.

BEATSON'S New System of Cultivation without lime, dung or summer fallows—illustrated by engravings.

The above books will be sold at very reduced prices—and with a discount, if purchased for Agricultural Societies.

JOSEPH P. CASEY,
*SEEDSMAN, &c. No. 2, Hanover-street,
next to Barnum's late Gadsby's Hotel.)*

Returns his sincere thanks to his friends and the publick, for the very liberal support he has received since his commencement in business, and informs them he has received per the Belvidera, from Liverpool, his general supply of spring Seeds, &c. &c.—and per different vessels from the northern states, a variety of native seeds, in particular, *SHAKERS SEEDS*—all of a superior quality, the growth of 1820—From Casey's knowledge and experience of more than twenty years in the cultivation and study of plants and seeds, in all their various branches, he hopes to give general satisfaction.

* A few bushels of seeds, oats, and a few pounds Wethersfield Onion still on hand.

† A liberal discount allowed to those who purchase to sell again.

Baltimore, April 20, 1821.

PRICES CURRENT.

Flour, from the wagons, 375 to \$3 87½—Whiskey, from do 22 cts per gallon—Hay, per ton \$17—Straw, 7—Wheat, red 70 a 73—White do 75 to 78 cts—Barley, 45 to 50—Oats, 23 to 25 cts—Potato do, for seed, 45 cents—Corn, 30 to 31—yellow, 26—Cod fish, per quintal, wholesale \$3, retail do \$4—N. Eng. Beans per bushel, \$1 12½—ditto Peas, 75 cents—Plaster in stone \$6 per ton—ditto ground \$8 per do—do do in bbls \$1 37½—do, do, bushel 33 cts—N. O. Sugar, 75 to 10—Muscovado, do, \$7 50 to 9 25—American White Lead, \$12 50—Ground, do, \$13 a 14—Linseed Oil, 75 cts—Feathers, 40 to 45 cts—N. E. Potatoes, retail 62½ cents per bushel—Live Cattle, 5 to \$5 50—Beef, prime pieces, 8 to 10 cts.—corn Beef, 7 cts—Mutton, 8 to 10 cts—Hams, 10 to 12 cts—Middlings, 8 to 10 cts—Butter, 20 to 25 cts—Eggs, 12½ cts—Cheese, 8 to 10 cts, pr lb—Tar, \$1 62½—Soft Turpentine, \$2—Pitch, \$2½—Rosin, common 14—bright do, \$3 per barrel.—Varnish, 25 cts.—Spirits turpentine, 33 cts. per gal.—Cotton, good Upland, 13 to 15 cts. per lb—Rice, 3 a 3½ cts.—ship and flooring Plank, \$25 to 27. Shingles, best 6½ a \$7 com. \$3 a 4½ p. M—Oak, wood, \$4 50—Hickory, \$5 per cord—Clover, seed \$6—Am. Orchard, grass do, \$4—Eng. do, do. or Cockfoot, do, \$8—Herds, do \$3—Sanfoin, per bushel \$8—Millet, do, \$2—Lucern, 62 cents per lb—Sweet Scented Vernal grass, 150 cents—Trefoli, 50 cents per pound—Ruta Baga, 50 cents—Mangie Wurtzel, 175 cents per pound—Cabbage seed, 2 to \$6 per pound—Cauliflower, 75 to 100 cts. per oz.—spring Turnips, \$8 per bushel—Peas, 25 to 37½ cts per quart—short orange Carrot, 12½ cts.—Parsnip, 12½ cts—Lettuce, 25 cents—Radish, 12½ to 20 cts—Beet 20 cents—Brocole, 31 to 100 cts.—Cucumber, 37 to 50 cts per oz.—Turnip seed, 50 to 125 cts per lb.—Chicory, 75 cents per pound—Rape, 12½ cents do—large Amsterdam Cabbage for cattle, 25 cents per oz—Irish Furz or Wine, \$2 per pound—Bush and Pall Beans, 6½ to 25 cents per quart—New York premium Ploughs of sizes from 7 to 16—Box Churns, 8 to \$9—Drill Machines, 10 to \$11—Bennet's broad cast Machine for sowing Clover, Turnip, and Grass Seeds, \$18—Expanding Cultivators, \$15—Post Augurs, 5 to \$9—Flexible Tubes, to relieve cattle when hoven or choaked, with gags, the pair \$5—Corn Shellers, 20 to \$25—Turnip Scoops, 50 cents each—large 2 horse Connecticut Ploughs, iron mould boards, \$11—do. do. wood, 10½—small Ploughs, do \$7 50.

MARYLAND TOBACCO—Eastern Shore crop Tobacco, 4 to \$5½—Potomac, 4 to \$5 50—Patuxant, 5 to \$7—Waggon, old ground, fired 8 to \$10—New, do. do. 10 to \$13—Yellow, none.

KENTUCKY TOBACCO—10 hds. were sold the last week for \$54.

Virginia Tobacco—no sales.

Extract of a letter from Columbus, Ohio, to the Editor of the Albany Plough Boy, dated 21st March, 1821.

Our present cash prices of produce are: Corn, 16 cents per bushel—Wheat, 25—Oats, 12½—Beans, common kind, 18—Pork, \$1 50 per cwt.—Beef, \$5—Cheese, 8 cents per lb—Butter, 8 cents."